

Vision Protection From Lasers Overview for Dr. Beagley, Australia



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Rob Goedert
US Army TARDEC
RDTA-RS, MS 263
Warren, MI 48397-5000

11 June 2010

maintaining the data needed, and including suggestions for reducin	completing and reviewing the collect g this burden, to Washington Headq ould be aware that notwithstanding	ction of information. Send commer juarters Services, Directorate for Ir	nts regarding this burden estimation Operations and Rej	nate or any other aspect ports, 1215 Jefferson D	existing data sources, gathering and of this collection of information, avis Highway, Suite 1204, Arlington with a collection of information if it
1. REPORT DATE 2. REPORT 11 JUN 2010 N/A		2. REPORT TYPE N/A		3. DATES COVERED -	
4. TITLE AND SUBTITLE		5a. CONTRACT NUMBER 5b. GRANT NUMBER			
Vision Protection	iew				
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Rob Goedert				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Army RDECOM-TARDEC 6501 E 11 Mile Rd Warren, MI 48397-5000, USA				8. PERFORMING ORGANIZATION REPORT NUMBER 20893RC	
9. SPONSORING/MONITO	AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S) TACOM/TARDEC			
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) 20893RC	
12. DISTRIBUTION/AVAI Approved for pub	ILABILITY STATEMENT lic release, distribut	ion unlimited			
13. SUPPLEMENTARY No.	otes ment contains color	images.			
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFIC		17. LIMITATION	18. NUMBER	19a. NAME OF	
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	OF ABSTRACT SAR	OF PAGES 5	RESPONSIBLE PERSON

Report Documentation Page

Form Approved OMB No. 0704-0188



Vision Protection From Lasers Protection for Eyes Day Cameras from Lasers



Problem: Lasers can disable vision systems

Mission:

 Provide solutions protecting eyes and day-vision cameras from laser weapons.

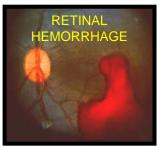
Objective:

- Develop materials that limit the amount of light energy allowed to the sensor
- Develop new optical system designs allowing the integration of advanced laser protection materials

Method:

- Integrate protection materials into optical systems and test in lab & field.
- Demonstrate relevant designs to combat vehicle PMs.

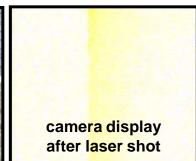
Eye Damage

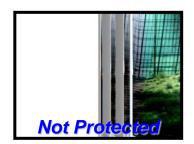


Camera Damage







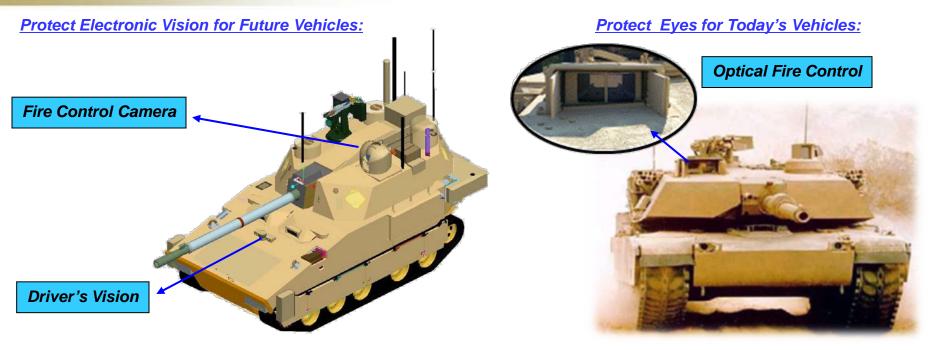






TARDEC Demo Areas

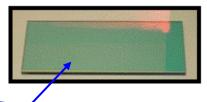




Commercial filters color the scene and don't address needed color combinations:

Fielded Hazard Protection:





Fielded Filter protects from laser rangefinders & designators



Laser Protection Research & Integration Laboratory





The Laser Protection Laboratory is used to develop and evaluate techniques to harden combat vehicle surveillance vision optics against multiple battlefield laser hazards and threats. In this laboratory, engineers and scientists conduct various optical performance tests on vision devices and laser protection filters, as well as conduct advanced research in nonlinear optical materials and novel optical design development. The laboratory is located in a Class 100,000 clean room and the available equipment includes several laser sources, detection devices, spectrometric instrumentation, optical test benches, laser beam profiling systems, optical microscopes, and computer support facilities.



Possible Areas of Information Exchange



- Protection technologies that do not require previous knowledge of wavelength.
- Protection technologies that respond to continuous wave through short pulse lasers.
- Published & Unpublished data for promising nonlinearly transmitting materials for eye protection.
- Techniques for incorporating nonlinear protection materials, maximizing protection performance in specific types of optical systems.
- Laser protection techniques/technologies that do not require a focal plane.
- Laser-induced threshold values for commercial cameras. There are a lot of cameras out there! We could reduce duplication & greatly expand our data base by sharing data.
- Laboratory methods for determining laser-induced damage thresholds for cameras.